



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/535,162	05/16/2005	G.B.Kirby Mcacham	60270 (70259)	2387
21874 7590 03/09/2009 EDWARDS ANGELL PALMER & DODGE LLP P.O. BOX 55874 BOSTON, MA 02205				
EXAMINER				
WANG, EUGENIA				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
03/09/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/535,162

Applicant(s)

MEACHAM, G.B.KIRBY

Examiner

EUGENIA WANG

Art Unit

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 January 2009.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
4a) Of the above claim(s) 15-22 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-14 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 16 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/5508)
Paper No(s)/Mail Date 5/16/05
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Inventor's Patent Application
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claim 15-22 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on January 5, 2009.

Information Disclosure Statement

2. The information disclosure statements filed May 16, 2005 has been placed in the application file and the information referred to therein has been considered as to the merits.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by US 549655 (Lessing).

As to claim 1, Lessing et al. teach of a bipolar interconnect plate [10], wherein oxidant is introduced on one side [14] and fuel is introduced on the other side (col. 3, lines 35-48; see figs. 2-4). It is noted that the bipolar interconnect plate is metallic, as it comprises of intermetallic materials, such as NiAl or Ni₃Al (abs). It is inherent that an adherent oxide layer is formed on the side being exposed to the oxidant gas (second surface as defined by the claim but referring to side [14] as shown in Lessing), wherein

a portion of the fuel gas would diffuse into the metallic plate from the side it is introduced in order to modify an oxidation environment at the metal-metal oxide interface to dynamically stabilize a thickness of the adherent oxide.

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In *re* Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte* Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)

In the case of the instant application the basis for expectation of inherency is that the structure of Lessing is the same as that of the claimed invention. As set forth above, Lessing's oxidant is introduced from via side [14], while the fuel is introduced from the opposite site (see fig. 2), wherein the material is the same as claimed (metallic, as set forth in the abs). Additionally, as seen in fig. 4, the structure is porous, and thus, some of the reactant gas would flow through, resulting in oxidant gas forming an adherent layer on side [14] in the porous areas of layer [70], and fuel gas diffusing in to stabilize the formed adherent oxide layer. Specifically, comparison of Lessing's fig. 4 to

the fig. 3A of the instant application can be drawn, wherein the structure is seen to be the same, wherein similar materials are embodied (metal plate and doped lanthanum chromite particles – see abs and col. 11, lines 20-23 of Lessing and p 8, line 25 to p 9 line 2 of the Specification).

The Examiner invites applicant to provide that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product.

Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

As to claim 8, Lessing et al. teach of a bipolar interconnect plate [10] for a fuel cell, wherein oxidant is introduced on one side [14] and fuel is introduced on the other side (col. 2, lines 56-59; col. 3, lines 35-48; see figs. 2-4). It is noted that the bipolar interconnect plate is metallic, as it comprises of intermetallic materials, such as NiAl or Ni₃Al (abs). Furthermore, there is a coating [70] of using a doped lanthanum chromite on the oxidant side (col. 11, lines 20-23; fig. 4). It is noted that such materials are disclosed to be stable in reducing and oxidizing atmospheres (refractory) (col. 11, lines 28-32). Furthermore, they are electronically conductive, and thus are electronically contacted to the opposing surface of plate [10] (as the plate exemplified to be NiAl or Ni₃Al, both of which are conductive) (col. 10, lines 3-4; col. 11, lines 23-28).

Furthermore, it is noted that coating [70] is porous, as indicated by the crevices shown in fig. 4. See rejection 1, as to the reasons of inherency). It is inherent that an adherent oxide layer is formed on the side being exposed to the oxidant gas (second surface as defined by the claim but referring to side [14] as shown in Lessing), wherein a portion of the fuel gas would diffuse into the metallic plate from the side it is introduced in order to modify an oxidation environment at the metal-metal oxide interface to dynamically stabilize a thickness of the adherent oxide.

Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 U.S.C. 102 and 103, expressed as a 102/103 rejection.

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993).

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990)

In the case of the instant application the basis for expectation of inherency is that the structure of Lessing is the same as that of the claimed invention. As set forth above, Lessing's oxidant is introduced from via side [14], while the fuel is introduced from the opposite site (see fig. 2), wherein the material is the same as claimed (metallic,

as set forth in the abs). Additionally, as seen in fig. 4, the structure is porous, and thus, some of the reactant gas would flow through, resulting in oxidant gas forming an adherent layer on side [14] in the porous areas of layer [70], and fuel gas diffusing in to stabilize the formed adherent oxide layer. Specifically, comparison of Lessing's fig. 4 to the fig. 3A of the instant application can be drawn, wherein the structure is seen to be the same, wherein similar materials are embodied (metal plate and doped lanthanum chromite particles – see abs and col. 11, lines 20-23 of Lessing and p 8, line 25 to p 9 line 2 of the Specification).

The Examiner invites applicant to provide that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product.

Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

As to claim 2, Lessing teaches of porosity within the bipolar plate [10] (as shown in fig. 4). This constitutes a selected path of a fuel (to reach the metal/metal-oxide interface at the surface [14]), barring specificity as to how such "selection" is accomplished. Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Also, limitations appearing in the

specification but not recited in the claim are not read into the claim. See *In re Zletz*, 893F.2d 319, 321-22, 13 USPQ2d, 1320, 1322 (Fed. Cir. 1989).

As to claims 3-5 and 11, Lessing teaches of using a doped lanthanum chromite (col. 11, lines 20-23) (as applied to claims 5 and 11). It is noted that such materials are disclosed to be stable in reducing and oxidizing atmospheres (refractory) (col. 11, lines 28-32) (as applied to claims 3, 5, and 11). Furthermore, they are electronically conductive, and thus form a continuous electronically conductive path between the opposing surfaces of the plate [10] (as the plate exemplified to be NiAl or Ni₃Al, both of which are conductive) (col. 10, lines 3-4; col. 11, lines 23-28) (as applied to claims 4, 5, and 11). (Note: With respect to the limitations that the particles extend through the thickness of the stabilized oxide layer, as required by claim 3, such a feature would be inherent. As set forth in the rejection to claim 1, the structure of Lessing and that of the instant application are the same. Thus, the oxide layer is inherently formed in Lessing would be in between the pores of coating [70] (crevices shown in fig. 4). See rejection 1, as to the reasons of inherency.)

As to claim 6, Lessing's refractory particles (coating [70]) inherently reduces a diffusion area of the stabilized oxide layer (which inherently forms within the crevices of coating [70]). As set forth in the rejection to claim 1, the structure of Lessing and that of the instant application are the same. Thus, the oxide layer inherently formed in Lessing would be in between the pores of coating [70] (crevices shown in fig. 4), which would also reduce a diffusion area of the stabilized oxide layer. See rejection 1, as to the reasons of inherency).

As to claim 7, Lessing's refractory particles (of coating [70]) are inherently lower in diffusivity than the oxide layer (that inherently forms within the crevices of coating [70], as seen in fig. 4), which would result in reducing the total diffusion. The basis for inherency is that the structure of Lessing and that of the instant application are the same, wherein similar materials are used (as set forth in the rejection to claim 1, specifically, comparing Lessing's fig. 4 to the fig. 3A of the instant application can be drawn, wherein the structure is seen to be the same, wherein similar materials are embodied (metal plate and doped lanthanum chromite particles – see abs and col. 11, lines 20-23 of Lessing and p 8, line 25 to p 9 line 2 of the Specification)).

As to claim 9, Lessing's intermetallic plate [10] is the porous substrate (as it has pores, voids [110]) that receives the porous layer (coating [70]).

As to claim 10, Lessing teaches of processes of depositing the porous layer (coating [70]) including plasma spraying, chemical vapor deposition, and reactive sputtering (thermal spraying processes) (col. 11, lines 51-55). Additionally, it is noted that although Lessing teaches of such processes, the limitation is seen to be a product by process limitation, wherein the product of Lessing is the same as that of the instant application (metallic plate with a porous coating of electrically conductive, refractory material on one side).

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is

unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)(citations omitted).

"The Patent Office bears a lesser burden of proof in making out a case of prima facie obviousness for product-by-process claims because of their peculiar nature" than when a product is claimed in the conventional fashion. In re Fessmann, 489 F.2d 742, 744, 180 USPQ 324, 326 (CCPA 1974). Once the Examiner provides a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product. In re Marosi, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983). Ex parte Gray, 10 USPQ2d 1922 (Bd. Pat. App. & Inter. 1989). See MPEP section 2113.

As to claims 12 and 13, such limitations (the method of depositing the metallic plate [10] onto the porous layer (coating [70]) are seen as product by process limitations, wherein the product of Lessing is the same as that of the instant application (metallic plate with a porous coating of electrically conductive, refractory material on one side). Comparing Lessing's fig. 4 to fig. 3A of the instant application supports such a position, as similar materials are embodied (metal plate and doped lanthanum chromite particles – see abs and col. 11, lines 20-23 of Lessing and p 8, line 25 to p 9 line 2 of the Specification). (See the rejection of claim 8, the portion in which inherency is set forth, for full details how the structure of Lessing and that of the instant application are the same.)

As to claim 14, as the plate [10] of Lessing et al. is metallic (as it has Ni and Al in it) and is made via compression, it is considered to be a foil, barring specification as to what constitutes a foil (col. 5, lines 1-18). Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Also, limitations appearing in the specification but not recited in the claim are not read into the claim. See *In re Zletz*, 893F.2d 319, 321-22, 13 USPQ2d, 1320, 1322 (Fed. Cir. 1989). (For an alternate interpretation as to what constitutes a foil, see * in the 103 section below).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
4. *Alternately, claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lessing, as applied to claim 8, in view of US 6677069 (Piascik et al.).

In this alternate interpretation, it is taken that the intermetallic (material [100]), interconnect plate [10] of Lessing is not considered to be a foil.

However, Piascik et al. teach of a similar fuel cell system, wherein interconnect materials are used. Metal foils are exemplified (col. 7, lines 52-56). The motivation for using such a material is to provide lightweight stacks that provide sufficient current conduction (col. 7, lines 52-56). Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to use a foil as an interconnect plate, as taught by Piascik et al., in the invention of Lessing in order to provide lightweight stacks that would have sufficient current conduction.

Additionally, it is noted that Piascik et al. embodies other conductive materials (besides just metallic foils). It is noted that intermetallic materials are embodied as well (col. 7, lines 63-67). Therefore Piascik et al. shows intermetallic materials (as exemplified by material [100] of Lessing) and metal foils are art recognized equivalents for conductive, interconnect material at the time the invention was made, and therefore one of ordinary skill in the art would have found it obvious to substitute the use of metallic foil for intermetallic materials. Furthermore, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Lastly, the substitution of metallic foils for intermetallic materials (which are set forth by Piascik et al. to be useful as electrically conductive, interconnect materials col. 7, lines 52-56 and 63-67) would have yielded the predictable result of acting as an interconnect material. Therefore it would have been obvious to one of ordinary skill in the art at the

time the invention was made to substitute metal foils for intermetallic materials, as such a substitution would have yielded the predictable result of having an interconnect that would function in the same manner (as an electrically conductive interconnect).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EUGENIA WANG whose telephone number is (571)272-4942. The examiner can normally be reached on 7 - 4:30 Mon. - Thurs., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Application/Control Number: 10/535,162

Page 13

Art Unit: 1795

/PATRICK RYAN/

Supervisory Patent Examiner, Art Unit 1795